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Abstract

**TECHNOLOGY OF REACTOR COMPONENT FABRICATION
OF METAL BERYLLIUM AND ITS OXIDES**

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We know a great number of reactors operated, built and designed in which metal beryllium and beryllium oxide are used as moderators and reflectors. In the report the technology of reflector and moderator fabrication of metal beryllium is described as well as that of beryllium oxide reflectors for research reactors.

The material used for reflector and moderator fabrication of metal beryllium is beryllium obtained by the distillation of a technical product. The report contains the description of a plant for beryllium distillation and of the quality of the received metal which is characterized by the impurity content.

The principles of the technology of distilled beryllium milling are stated.

The methods of shaping compact metal-ceramic slabs are described. The technology of cold pressing with subsequent sintering is compared with that of hot pressing in vacuum.

It is pointed out that with the account of beryllium features the fabrication of reflectors and pushers is accomplished by turning, milling, boring, polishing and other kinds of treatment. Several photos characterizing complexity of shapes of single details, reflectors and pushers for research reactors are included.

It is given the description of casting process under the pressure of slips from beryllium oxide on thermoplastic binder. It is stated that for forming of large-sized products with thick walls one should use metal moulds.

Translation provided by courtesy of the submitting Government

The results of the investigation of conditions for removing of thermo-plastic binder out of castings are given. Data showing that the rate of temperature rise after binder removal depends on the amount of the thermo-plastic binder are shown.

Techniques and conditions of high temperature sintering of details in a flame furnace are given. A microstructure of a finished product is shown.

The principles of mechanical treatment of beryllium oxide details on flat grinding machine by coherent and free abrasive are stated.